

## CLAIMS

1. A radio communication apparatus that is applied to a radio communication system and communicates with other radio communication apparatus in the radio communication system using one available channel or a plurality of channels, the radio communication apparatus comprising:
- a reception processing unit that, when input reception signals of the channels of the radio communication system is received, measures reception states of input reception signals of each of the channels, generates local channel reception information of each of the channels based on a result of the measurement, and applies a reception processing to the input reception signals to generate decoded signals;
  - a media-access-control unit that, when data is transmitted using two or more channels, generates transmission frames for each of the channels using transmission data;
  - a transmission processing unit that generates radio signals including each of the transmission frames; and
  - a channel-information processing unit that generates local feedback information based on the local channel reception information, and inserts the local feedback information generated into one of the radio signals or a plurality of the radio signals, wherein the radio communication apparatus transmits the radio signals including the local feedback information.
2. The radio communication apparatus according to claim 1,

wherein the channel-information processing unit generates the local feedback information based on the local channel reception information and resource information that is a processing load of the media-access-control unit.

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3. The radio communication apparatus according to claim 1, further comprising a selector that, when the channel-information processing unit inserts the local feedback information, selects the radio signals into which the local feedback information is inserted, based on  
10 the local channel reception information.

4. The radio communication apparatus according to claim 1, wherein  
the reception processing unit extracts, when transmission  
15 source feedback information is inserted in each of the input reception signals by the other radio communication apparatus, the transmission source feedback information,  
the media-access-control unit determines a transmission system and a transmission speed based on the transmission source feedback  
20 information extracted, and  
the transmission processing unit generates the radio signals based on the transmission system and the transmission speed determined.

25 5. The radio communication apparatus according to claim 1,

wherein

the reception processing unit extracts, when transmission source feedback information is inserted in each of the input reception signals by the other radio communication apparatus, the transmission  
5 source feedback information,

the media-access-control unit extracts a transmission source address included in the decoded signals at a time of reception, and extracts a destination address of transmission data at a time of transmission, and

10 the channel-information processing unit generates a local feedback table, in which the local channel reception information, the transmission source feedback information extracted, and the transmission source address extracted are stored corresponding to each other at the time of reception, searches through the local  
15 feedback table with the destination address as a keyword at the time of transmission to generate the local feedback information based on the local channel reception information corresponding to the transmission source address for which the transmission source address stored in the local feedback table and the destination address coincide with each  
20 other, and determines a transmission system and a transmission speed based on the transmission source feedback information corresponding to the transmission source address for which the transmission source address stored in the local feedback table and the destination address coincide with each other, and

25 the transmission processing unit generates the radio signals

based on the transmission system and the transmission speed determined.

6. A radio communication apparatus that is applied to a radio  
5 communication system and communicates with other radio communication apparatus in the radio communication system using one available channel or a plurality of channels, the radio communication apparatus comprising:

a reception processing unit that, when input reception signals of  
10 the channels of the radio communication system is received, measures reception states of input reception signals of each of the channels, generates local channel reception information of each of the channels based on a result of the measurement, and applies a reception processing to the input reception signals to generate decoded signals;

15 a media-access-control unit that, when data is transmitted using two or more channels, generates local feedback information based on the local channel reception information, further generates transmission frames for each of the channels using transmission data, and inserts the local feedback information generated into one of the transmission  
20 frames or a plurality of the transmission frames; and

a transmission processing unit that generates radio signals including each of the transmission frames, and transmits the radio signals generated.

25 7. The radio communication apparatus according to claim 6,

wherein the media-access-control unit generates the local feedback information based on the local channel reception information and resource information that is a processing load.

- 5     8.     The radio communication apparatus according to claim 6, wherein

the media-access-control unit extracts, when transmission source feedback information is inserted in the decoded signals by the other radio communication apparatus, the transmission source  
10     feedback information, and determines a transmission system and a transmission speed based on the transmission source feedback information extracted, and

the transmission processing unit generates the radio signals based on the transmission system and the transmission speed  
15     determined.

9.     The radio communication apparatus according to claim 6, wherein the media-access-control unit

at a time of reception, extracts a transmission source address  
20     included in the decoded signals and generates a local channel reception information table in which the local channel reception information and the transmission source address extracted are stored corresponding to each other, and

at a time of transmission, extracts, when data to be transmitted  
25     is a feedback frame for notifying local feedback information, a

destination address in the feedback frame, searches through the local channel reception information table with the destination address as a keyword, generates the local feedback information based on local channel reception information corresponding to the transmission source address for which the transmission source address stored in the local channel reception information table and the destination address coincide with each other, and inserts the local feedback information generated into the feedback frame.

10 10. The radio communication apparatus according to claim 9, wherein the media-access-control unit

when generating the local channel reception information table, stores a time when the of the local channel reception information table is generated,

15 when information stored in the local channel information table is used, compares a present time the time when the of the local channel reception information table is generated,

when a difference between the present time and the time when the of the local channel reception information table is generated is within a predetermined range, generates the local feedback information based on the local channel reception information of the local channel information table, and

when the difference exceeds the predetermined range, does not generate the local feedback information.

11. The radio communication apparatus according to claim 6,  
wherein the media-access-control unit

when the decoded signal is a feedback frame from the other  
radio communication apparatus, extracts a transmission source  
5 address included in the decoded signal, extracts transmission source  
feedback information included in the feedback frame, and generates a  
transmission source feedback information table in which the  
transmission source address and the transmission source feedback  
information are stored corresponding to each other, and

10 at a time of transmission, extracts a destination address from  
data to be transmitted, searches through the transmission source  
feedback information table with the destination address extracted as a  
keyword, and determines a transmission system and a transmission  
speed based on the transmission source feedback information  
15 corresponding to the transmission source address for which the  
destination address and the transmission source address stored in the  
transmission source feedback information table coincide with each  
other.

20 12. The radio communication apparatus according to claim 11,  
wherein the media-access-control unit

when generating the local channel reception information table,  
stores a time when the of the local channel reception information table  
is generated,

25 when information stored in the local channel information table is

used, compares a present time the time when the of the local channel reception information table is generated,

when a difference between the present time and the time when the of the local channel reception information table is generated is

5 within a predetermined range, determines a transmission system and a transmission speed based on the transmission source feedback information of the transmission source feedback information table, and

when the difference exceeds the predetermined range, determines a transmission system and a transmission speed that are  
10 decided in advance.